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| 09/235,319 | 01/22/1999 | RICHARD M. UBOWSKI | IYENGAR8-10 | 4856 |

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| EXAMINER |
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BRINEY III, WALTER F

| ART UNIT | PAPER NUMBER |
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2646

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|----------------------|----------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/235,319 | UBOWSKI ET AL. | |
| | Examiner | Art Unit | |
| | Walter F. Briney III | 2646 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10, 11, 20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1-9, 14-19 and 22-28 is/are rejected.
- 7) ☐ Claim(s) 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1-9, 14-19 and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (Figure 6) in view of Gritton (US Patent 4,574,166) and further in view of Campanella et al. (US Patent 3,894,200).**

Claim 1 is limited *an echo canceller*. Figure 6 of the application is indicated as a prior art figure. Therein, a conventional cordless handset and base station arrangement are depicted. Each *wireless device* incorporates some type of echo canceller. As seen from the figure, the handset portion includes an *acoustic echo canceller*, while the base portion includes a *hybrid echo canceller*. Clearly, the prior art figure simply illustrates applications for two types of echo cancellers, as such, the applicant's admitted prior art does not necessarily provide an echo canceller that can be configured as either an acoustic or hybrid echo canceller by way of a *control register*.

It is then apparent that one of ordinary skill in the art at the time of the invention would need to, as the applicant indicates, choose an echo canceller for each situation. As such, Gritton teaches a tandem adaptive filter arrangement. See Abstract. The adaptive filter arrangement is suitably programmed to cancel either *acoustically* coupled echo signals or electronically coupled echo signals, also known as network or *hybrid*

echo. In general, the system of Gritton allows a plurality of echo canceller modules (101-0) through (101-(N-1)) to be cascaded and selectively updated and output, which allows a substantial increase in calculable echo path length. See column 1, lines 10-24, and column 1, line 65, through column 2, line 24.

In particular, Gritton teaches that modulo N counter (107) of figure 1 controls the activation of each cascaded echo canceller, and is programmed according to the type of echo that is to be cancelled. See column 4, lines 15-36. Thus, the modulo N counter (107) corresponds to a *control register*. As is clearly seen from figure 1, the echo canceller uses the same interface, or common physical connection, whether it operates as an *acoustic* or *hybrid echo canceller*.

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement both the acoustic and hybrid echo cancellers of the applicant's admitted prior art using the echo canceller as taught by Gritton, if for no other reason, because the prior art does not provide any teaching of echo canceller structure or choice. In addition, the choice to use Gritton to fulfill the needs of the prior art is simply an intended use of the system of Gritton.

For treatment of the newly recited limitations directed toward using a digital echo canceller, see the proceeding section entitled Response to Arguments.

Claim 2 is limited to *the echo canceller according to claim 1*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. In accordance with providing echo cancellation for either an acoustic or hybrid echo, the modulo-N counter (107) is programmed with a value N associated with

the typical echo path length of a respective acoustic or hybrid echo. See column 4, lines 27-30. Clearly, the size of N determines the number of echo cancellers in tandem, and the effective *span length*. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 3 is limited to *the echo canceller according to claim 2*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. The mere fact that programming the counter inherently changes the span length indicates that the *span length* is *operably reconfigurable*. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 4 is limited to *the echo canceller according to claim 1*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. The counter module (107) is responsive to a clock signal. At each instance of the clock signal, the counter increments its stored count value by a value of one. In turn, one echo canceller (101- i) of the cascaded arrangement shown in figure 1 is effectively enabled to perform tap updates. See column 2, lines 13-16. It is understood that tap updates are affected by the step size used. Disabled taps correspond to step sizes of zero. In this way, the control register (107) *configures the step-size relating to adaptation* of each echo canceller (101-0) through (101-($N-1$)). Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 5 is limited to *the echo canceller according to claim 4*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. Simply, the fact that the counter module (107) is operable to control the adaptation of each echo canceller module (101-0) through (101-(N-1)) indicates that the *step sizes are adapted to be operably reconfigurable*. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 6 is limited to *the echo canceller according to claim 1*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. As shown in the rejection of claim 4, Gritton teaches controlling the tap update ability of each echo canceller module (101-0) through (101-(N-1)) (i.e. *said control register is adapted to configure an ability to update tap information relating to said echo canceller module*). Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 7 is limited to *the echo canceller according to claim 6*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. Simply, the fact that the counter module (107) is operable to control the adaptation of each echo canceller module (101-0) through (101-(N-1)) indicates that the *ability to update tap information is adapted to be operably reconfigurable*. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 8 is limited to *the echo canceller according to claim 1*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. As shown in the rejection of claim 4, Gritton teaches controlling the tap update ability of each echo canceller module (101-0) through (101-(N-1)) between full update and disabled update (i.e. *said control register is adapted to select one of a plurality of possible adaptation modes of said echo canceller module*). Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 9 is limited to *the echo canceller according to claim 8*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. Simply, the fact that the counter module (107) is operable to control the adaptation of each echo canceller module (101-0) through (101-(N-1)) indicates that the *selection is operably reconfigurable*. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 14 is limited to *the echo canceller according to claim 1*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. Because Gritton teaches configuring the echo canceller of figure 1 as either an *acoustic* or *hybrid echo canceller*, it inherently follows that the inputs or any two of a *microphone*, a *telephone line-in*, and a *handset in*. See column 4, lines 15-30. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 23 is limited to *the echo canceller according to claim 1*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. As shown in the rejection of claim 1, as covered by the applicant's admitted prior art (figure 6) in view of Gritton, it would have been obvious to incorporate the configurable echo canceller of Gritton into the *handset of a cordless telephone*. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claim 24 is limited to *the echo canceller according to claim 1*, as covered by the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella. As shown in the rejection of claim 1, as covered by the applicant's admitted prior art (figure 6) in view of Gritton, it would have been obvious to incorporate the configurable echo canceller of Gritton into the *base unit of a cordless telephone*. Therefore, the applicant's admitted prior art (figure 6) in view of Gritton and further in view of Campanella makes obvious all limitations of the claim.

Claims 15-19, 25 and 26 recite limitations that are essentially the same as those presented in respective claims 1, 2, 4, 6, 8, 23 and 24, as covered by the applicant's admitted prior art in view of Gritton and further in view of Campanella, and are rejected for the same reasons.

Claims 22, 27 and 28 recite limitations that are essentially the same as those presented in respective claims 1, 23 and 24, as covered by the applicant's admitted prior art in view of Gritton and further in view of Campanella, and are rejected for the same reasons.

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

2. **Claims 10, 11, 20 and 21 are allowed.**

Claims 10, 11, 20 and 21 were objected to in the previous Office Action filed 09 May 2005. As each of these has been rewritten so that they no longer depend from a rejected base claim, they are allowable over the cited prior art.

3. **Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.**

Claims 12 and 13 were objected to in the previous Office Action filed 09 May 2005. These claims stand as objected as they have still not been amended so that they no longer depend from a rejected base claim.

Response to Arguments

Applicant's arguments filed 08 August 2005 have been fully considered but they are not persuasive.

With respect to claim 1, the applicant alleges on pages 10 and 11 of the current response that the plurality of adaptive echo cancellers disclosed by Gritton are analog echo cancellers, the examiner respectfully disagrees. As a first matter, the applicant has not provided evidence supporting the above allegation. A review of Gritton reveals

no mention of analog signal processing. However, there is no mention of digital signal processing either. Therefore, Gritton anticipates all limitations of the claim with the exception of a digital echo canceller as recited.

While the type of signal processing used by Gritton is not specified, column 3, lines 8-10, of Gritton states that any number of known echo cancellers are to be used in the realization of the disclosure invention of Gritton. Therefore, the examiner takes Official Notice of the fact that digital echo cancellers were well known at the time of the invention. For example, the prior art digital echo canceller of Campanella seen in figure 4 provides full adaptive echo cancellation for a telecommunication line. It would have been obvious to one of ordinary skill in the art to implement the echo cancellers of Gritton with digital echo cancellers as were known in the art (e.g. Campanella, figure 4) as digital signal processing systems benefit from increased noise immunity, reduced signal distortions and greater longevity over analog circuitry.

With respect to claims 2-9, 14-19 and 22-28, the applicant alleges on pages 10 and 11 of the current response that these claims are allowable for the same reasons as those treated above with respect to claim 1, therefore, the examiner respectfully disagrees for the same reasons. As all of the applicant's arguments have been shown to be either moot or unpersuasive, the rejections of claims 1-9, 14-19 and 2-28 are maintained.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2646

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SINH TRAN
SUPERVISORY PATENT EXAMINER

WFB
8/31/05